

**ABSTRACT**

A means for detecting a presence of a particular material in the air, a filter for an air conditioner which can confirm the presence of the particular material in the  
5 air, and a method for confirming a performance of the filter for an air conditioner about a removal of the particular material and/or a lifetime of the filter for an air conditioner are provided.

The particular material present in the air is detected by a color change of a colorimetric sensor comprising a receptor molecule specifically binding with the  
10 particular material in the air, and a polymer molecule whose light absorbency is altered due to binding of the particular material and the receptor molecule.